Gazzola P, Onyango V.

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***Journal of Environmental Policy and Planning* 2018,**

https://doi.org/10.1080/1523908X.2018.1438253

Shared values for the marine environment – developing a culture of practice for marine spatial planning

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Abstract

Though still relatively new, the development of marine spatial planning has been based on the on the premise that as a rational planning process, it can be applied following universal principles and steps informed by land-based inspired theoretical underpinnings. However, within this process, differences between marine and terrestrial environments are being overlooked, potentially affecting the way in which the marine environment is understood and valued, and the development of a culture of practice for, and specific to, marine spatial planning. By framing planning as a cultural construct, this paper aims to explore the extent to which land-based rationales are affecting the development of a marine spatial planning culture of practice, with its own ethos and shared values. A culturalised planning model adapted from Knieling and Othengrafen (2015) is used as a framework. Whilst acknowledging the importance of the contributions from land-based planning and the ecological sciences, the findings suggest that those unconscious beliefs and perceptions affecting society's understanding of the marine environment should contribute to informing shared values for marine spatial planning practice.

Keywords: marine spatial planning, cultures of practice, shared values, culturalised planning model

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Introduction

Marine spatial planning is proposed as a means for achieving the right mix between using and protecting marine resources in a sustainable way. This entails making appropriate arrangements for addressing human impacts on the marine environment and biodiversity for conservation and providing for its sustainable management (Laffoley, 2000). It also entails taking into account on the one hand, the sea's growing economic importance with its oil, gas, sand and gravel deposits, fishing grounds, transportation routes, areas of sustained wind and waves, and opportunities for aqua and mariculture (Ehler, 2010), and the urgent need to achieve coexistence among these different activities (Dempster and Sanchez-Jerez, 2008). On the other hand, its ecological importance, as the sea provides areas of high biodiversity, endemism and productivity, spawning and nursery areas and migration stopover points (Ehler, 2010). Notwithstanding this, it is also important to acknowledge that the sea has an intrinsic importance (Kellert, 2003), which goes beyond the moral justification to degrade for material or economic benefits, and accounts for a series of values that underpin the relationships and connections between humanity and the marine environment. It is these values that should inform and shape marine spatial planning, and as argued by Ostrom *et al*. (1999), provide the basis for an "intentional use of resources" (Ramos *et al*., 2015, pg.1).

Though still relatively new and not always possible, to date marine spatial planning has been based on the premise and ambition that it should complement or be integral to terrestrial spatial planning (Duck, 2012; Smith *et al*., 2011; Kidd and Shaw, 2014), by essentially extending planning to the sea. It has been built upon established and emerging patterns of sea use (Smith *et al*, 2012), with the scope of marine spatial planning often defined by material and economic benefits determining the extent and type of competing developments that should occur, rather than on a series of values that question whether development should occur. For Gazzola *et al.* (2015), this terrestrial approach or perspective to marine spatial planning is resulting in deficits that affect the way in which the marine environment is understood and managed through spatial planning. They refer in particular to disciplinary, conceptual, legitimacy and knowledge deficits. According to Dallmeyer (2003), the lack of attention to sea- or marine environment-specific values and understandings can be instead attributed to two factors. First, that "humans now are profoundly terrestrial organisms" (page ix) who do not view the marine environment as having the same value of terrestrial environments due to lack of knowledge (see Helmreich, 2011, Strange, 2005) and poor understanding of the physical environment (Duck, 2012; Crowder and Norse, 2008); or of the way in which sea-based development activities affect the functioning of marine ecosystems (Gilbert *et al*., 2015). This is further reflected in the inadequate understanding of the language adopted by users of the marine environment when expressing their positions, values and desires in light of potential planned changes (Ramos *et al*., 2015); and by the simplistic way in which planning areas are identified and defined, with terms such as "inshore" and "offshore" used in a vague and meaningless way (Janßen *et al*. 2013). Second, that "humans own land" (Dallmeyer, 2003, pg. ix); landownership provides a series of responsibilities, expectations, rights and duties articulated by both tradition and law, which contribute to the definition of values that inform and shape sound policy- and decision-making for sustainability within the context of terrestrial spatial planning practices. Challenges associated with planning the marine environment are further heightened by problems relating to the management of common-pool

resources, which go beyond issues relating to property rights and require marine resources to be used fairly and efficiently - and not just sustainably (Ostrom *et al*., 1999).

As noted by Qiu and Jones (2013) and Boyes and Elliott (2014), a plethora of mechanisms for managing these challenges, including policies, directives and regulations, exist. Within the European context for example, in addition to the EU Birds (Directive 2009/147/EC) and Habitats (Directive 92/42/EEC) directives, an environmental assessment of the potential impacts on the marine environment and on special protected areas is required for projects and for development plans and programmes, under the EIA (Environmental Impact Assessment, initial Directive 85/337/EEC amended in 1997, 2003 and 2009; then codified by Directive 2011/92/EC, amended in 2014 by Directive 2014/52/EU) and SEA (Strategic Environmental Assessment, Directive 2001/42/EC) directives, respectively. Further, the Marine Strategy Framework Directive (MSDF, Directive 2008/56/EU), provides an important policy framework for effectively protecting the marine environment, particularly when considered in conjunction with other (sectoral) directives. However, the authors also acknowledge the existence of overlapping duties and of "tensions and weak links" between these mechanisms, and the crowded nature of this policy landscape (Qiu and Jones, 2013, p.180). Boyes and Elliott (2014; 2016) describe the EU's policy framework as highly complex and compartmentalised, vague in its commitments and lacking in specific details. This in turn is resulting in a piecemeal approach to the protection of the marine environment (Boyes and Elliott, 2014), and in practice, to political expediencies and conflicts between sectors and priorities (Jones et al., 2016), though an evolving trend towards a more holistic approach to protecting the marine environment is acknowledged (Boyes and Elliott, 2014).

The development of marine spatial planning systems is now a reality in many countries, which has often drawn on land-based experiences, techniques, understandings and values to frame marine spatial planning agendas (Ehler and Douvere, 2009, Peel and Lloyd, 2004, Jay, 2010, Gazzola et al., 2015). In this context, the similarities between terrestrial spatial planning and marine spatial planning are emphasised, with the first having been described as the "terrestrial parent" (Peel and Lloyd, 2004, p.372) or as the "land-based cousin" (Kidd and Ellis, 2012, p.49) of the latter. Whilst according to Jay *et al* (2013, p.206) "marine spatial planning is beginning to be widely recognised as a distinctive approach in its own right that represents an advance on sectoral regulation", for Jones *et al* (2016) evidence from practice suggest that in reality single sectoral objectives are still driving marine spatial planning processes, and that it might be more accurate to refer to marine spatial plans as "strategic sectoral plans" (p.260)[1]. The underlying assumption is therefore that as a rational planning process marine spatial planning and terrestrial spatial planning are *related*, and that the nature of this relationship allows for marine spatial planning to be applied following universal principles and steps informed by land-based inspired theoretical underpinnings (Kidd and Shaw, 2014). Moreover, that to facilitate the coordination between terrestrial- and marine-based planning systems, the two spatial planning systems should become integrated (Smith *et al*., 2011). However, when making these assumptions or approximations, fundamental differences between the marine and terrestrial environments are likely overlooked, potentially affecting the development of a set of values that could not only provide a better understanding of what the marine environment is, how it

[1] It is worth noting that due to existing gaps in high sea governance and in data availability and accessibility, marine spatial planning in areas beyond natural jurisdictions, such as the high seas and exclusive economic zones (EEZ), require an expert-based approach to marine spatial planning that goes beyond conventional spatial planning management options (Ardon et al., 2008).

should be viewed and valued; but could also provide a framework for shaping both, marine spatial planning agendas and cultures of practice. Drawing on the academic and policy literatures, this paper aims to explore the extent to which these approximations are influencing the development of a spatial planning system informed by its own set of values tailored to address marine environment needs, and guide marine spatial planning practice.

Marine spatial planning as an emerging "planning culture" of practice

There is no doubt that the marine environment is becoming a central concern of and for planning, legitimising the emergence of marine spatial planning in both, policy and practice. Furthermore, that a combination of land-based and/or ecological views and perspectives are contributing, albeit rather confusingly and not always in a coherent way, to the development of what the marine environment is understood to be and about what marine spatial planning is expected (or should aspire) to deliver. Within this context, it becomes legitimate to question what are the underlying values informing our understanding(s) of the marine environment, guiding marine spatial planning agendas and practices; and contributing to the development of a "planning culture" in marine spatial planning in different contexts.

Though there is no agreed definition, there is general consensus that a planning culture refers to the ethos and shared values of a system, such as those of the emerging marine spatial planning system. In this context, ethos would represent the character, spirit, attitudes or ideals of marine spatial planning, while values would encompass those guiding or operating principles that underpin the practice of marine spatial planning helping to achieve the ideals that it aspires to, and are shared by the stakeholders involved in the planning process (Getimis, 2012, p.29). The concept of cultures of planning has been widely discussed within the area of European spatial planning (Booth, 2011; 1993; Knieling and Othengrafen, 2015; Sanyal, 2005), as a result of an emerging appreciation that "… major differences exist in the ways that planning is conceived, institutionalised, and carried out" (Friedmann, 2005, p.183); and that different systems have their own cultural specificities (Sanyal, 2005) that help explain how and why planning is practiced in a certain way (Taylor, 2013). Following Sandercock (2005), understanding planning as a cultural construct goes beyond considering it as a subset of a country's specific culture shaped by political, institutional and ideological interests or historical roots, as it can itself redefine politics, generate new power dynamics or sources of power and give legitimacy to planning actions, uses or stakeholders. Thus, as a social and interactive activity, planning can contribute to defining, whilst being bound by, its specific context of operationalisations and complex relations (Knieling and Othengrafen, 2015, p.2134). In this paper, this is taken to refer to the marine environment and the wider (emerging) marine spatial planning system, including the various attributes that define those socio-ecological, economic, governance, political and cultural relations as well as the "taken-for-granted assumptions" (ibid., p.2135). What might be the implication of this is that marine spatial planning could develop its own culture of practice, informed by experiences in which different stakeholders participate, interact, dominate, create meanings and coordinate shared or diverse actions framing spatial planning policies, processes and practices, setting the foundation for its own ethos and shared values. Geographical, experiential and rational land-sea relations, as well as the development path taken by most marine spatial planning systems heavily influenced and reliant upon the more established terrestrial spatial planning system, means that a marine spatial planning culture would most likely emerge as a sub-culture of terrestrial spatial planning systems. But can marine spatial planning still develop a culture

of practice that is tailored to appreciate the major differences between the marine and terrestrial environments, and be guided by norms and shared values that represent its own cultural, socio-economic, political, biophysical and ecological specificities and spatial human-environment interactions?

The planning literature offers different frameworks for understanding and framing spatial planning cultures, in support of mainly comparative European research. For example, Booth (2011) uses the concept of path dependence to look at how the historical sequences of events contribute to determining the properties and events that shape the direction that planning processes and institutions might take. While Getimis (2012) argues that to understand planning cultures, a multi-scalar approach should be adopted, focussing on (a) actors' constellation and power, to uncover the (planning) action arena and the interactions between institutions and actors; (b) knowledge forms/knowledge orders, looking both, at how knowledge is produced, used and transformed in planning processes and at how the actors' constellation mobilises, disseminates and uses knowledge; and (c) policy styles, referring to those societal values that define styles of planning implementation. Informed by the work of Schein (2004) on levels of culture, Knieling and Othengrafen (2015) propose a culturised planning model composed of (a) planning artifacts, thus visible planning structures, processes and products; (b) planning environment, encompassing the assumptions and values that are taken for granted by the planning profession and inform the actions of the planners involved; and (c) societal environment, which captures the underlying and unconscious beliefs, perceptions, thoughts and feelings that affect planning, and form the specific societal background (see Figure 1a).

To gain a better understanding of marine spatial planning as an emerging culture of practice, the remainder of the paper loosely follows Knieling and Othengrafen's (2015) model, as this approach is better suited to engage with the "manifest and non-manifest" and "conscious and unconscious" routines and practices of planning (p. 2137). This is based on the premise that land-based theoretical underpinnings, experiences, techniques, understandings and values are shaping marine spatial planning agendas and practice (Ehler and Douvere, 2009, Peel and Lloyd, 2004, Jay, 2010, Gazzola et al., 2015; Kidd and Shaw, 2014) and understandings about what the marine environment is. Moreover, following Schein (2004), that Knieling and Othengrafen's (2015) model allows to explore the thinking and practice of marine spatial planning stemming from shared professional ethos and more general societal values, and help make explicit those informal norms and values guiding the application of marine spatial planning in practice.

In this paper, Knieling and Othengrafen's culturalised planning model is however, turned upside down (see Figure 1b). This is to reflect the view that marine spatial planning could be considered as a sub-culture (or an *offspring*) of terrestrial spatial planning and that as such, the actors acting and the stakeholders participating in the process are conditioned by the wider system, including the existing views, professional norms, power dynamics, taken for granted assumptions, and understanding of planning they practice in and by the wider societal environment (see Friedmann, 2005; Sanyal, 2005; Fischler, 1995), which are in turn informing marine spatial planning artifacts and shaping emerging cultures of practice. Subsequently, the three levels of culture identified by the model are explained and the guiding ethos and set of shared values underpinning the emergence of a marine spatial planning culture are explored, based on the different understandings and views of marine spatial planning practice portrayed in the academic and policy literatures.

Insert Figure 1a and 1b here

Societal environment

The societal environment refers to all those taken for granted assumptions, understandings, beliefs and perceptions that form and define the context in which marine spatial planning as a social and interactive activity takes place. Within the context of this paper it is therefore associated with the marine environment, as the place where marine spatial planning is practiced and complex relations are formed. But what are those taken for granted assumptions, values and beliefs embedded in our understandings of the marine environment?

As explained by Gilbert *et al*. (2015), the marine environment requires a three-dimensional spatial approach which is difficult to represent on two-dimensional maps. The need to engage with the multiple dimensions of the sea is dictated by the varied types of development activities and uses of the marine space. These include use of the water surface through activities such as shipping; use of the water column through farming or aquaculture; use of the sea floor through benthic or bottom trawling; uses which require the insertion of cables for example, in the sea floor; and a multidimensional use of the sea through activities such as oil and gas extraction and deep sea mining (ibid., p.66). Further, the authors argue that the terrestrial environment is more static; the constant motion and force of water, whether induced by human or natural forces, can cause rapid changes in the physical conditions of the sea, making it more dynamic with the characteristics and nature of distinct places and conditions for certain marine activities constantly changing in both time and space, rendering therefore a place-specific spatial planning response difficult to implement (see Healy, 1997). For Duck (2012), if compared to terrestrial environments, the high level of inherent dynamism, variability and mobility of the sea make the integration of the two spatial planning systems fundamentally problematic, and the need to develop a better understanding of the marine environment, an imperative. An appreciation of the delineation of ecologically cohesive marine planning units defined by natural processes, rather than administrative and political feasibility is needed to ensure that coherent and appropriate planning solutions are used in response to specific ecological needs, determined either by the growing pressures on the marine realm and resulting negative impacts or by the intrinsic needs of the marine environment. For Kerr et al. (2014) the emphasis on "integration" is misleading. Whilst acknowledging the fundamental differences between marine and terrestrial spatial planning in the UK, for example, the authors argue that as each planning system cannot exist and operate in isolation, the emphasis should be on greater and more effective coordination, so that impacts, proposals and responsibilities can be better accounted for.

According to Jay (2012), the differences between the marine and terrestrial environment have not necessarily been overlooked; rather, they have been reassessed. Many of the differences between the two environments suggest that a conventional understanding of the environment in terms of a physical space is being simply expanded from a two-dimensional to a three-dimensional space to better suit and help comprehend at least some of the complexities of the marine environment. Jay (2012) argues that such a physical perspective of space and understanding of the marine environment fails to encompass the more experiential notions of space, informed by social, cultural and emotive relations (ibid). In Graham and Healey's terms an understanding of the marine environment should be the product of a heterogeneity of experiences through time and space (1999, p.627). But whose experiences or which relations should be accounted for? The marine environment

can be used, thus experienced in different ways. Some argue that the intensity of use and type of activity could be a way of defining different experiences of the marine environment, and apply the urban and rural land-based dichotomy to the sea to make those differentiations (Flannery and Ó Cinnéide, 2012; Smith et al. 2011). Experiences can also be defined based on the nature and interests of sea users, which include those who have an economic interest in the marine environment and trade or exploit marine resources; and those who have an environmental interest and protect the health and integrity of marine ecosystems. Within these two groups, the major industries such as the energy, oil and gas and ICT industries (Jones, 2009) and the NGOs and conservationists (Eden *et al*., 2006) appear to be increasingly contributing to decisions in marine planning, leading to the marginalisation of those users who have an indirect interest in the sea as suggested by Gazzola *et al*. (2015). Blount and Pitchon (2007) and Jones (2009) refer to this potential third group of users as those who experience the sea as a way of life and as a contributing factor to a community's culture. This group of users may adopt a different view and understanding of the marine environment, informed by the way in which they organise themselves around their local environment and by the way in which the marine environment has contributed to defining who they are as a community and as a locality over time. Each meaning will be true and reflect the values and experiences of a specific community, and will be expressed using a language that emphasises the cultural significance of the sea, for example, in terms of its inherent dynamism, mutability or of its multifaceted uses and functions.

According to Helmreich (2011), these cultural aspects should be considered on par with the more scientific and rational understandings of the marine environment. But would such an approach help develop more of an understanding of a community's view and perception of, and relations to, the marine environment, rather than a more substantive understanding of the marine environment? It is also worth noting that the consideration of these three groups of users alone would emphasise an anthropocentric perspective of the marine environment, as the consideration and rights of non-human marine species who also experience and inhabit the marine environment would be excluded (De Santo, 2011). A relational understanding of the marine environment does not necessarily relate to human relations only, as arguments have been advanced for relations between humans and non-humans to be considered as well (Murdoch, 2006). But what about the relations among the non-human species, how can these be taken into account and inform marine spatial planning practice too? Following Jay (2012), can their relationships be spatially defined "within and beyond discrete areas and time periods"?

Suggesting a relational perspective to marine spatial planning could arguably provide a framework in which different relations, understandings, languages, and perhaps societal values can be expressed and translated into the formulation of plans (Jay, 2012). However, as summarised by Jones (2009a, p. 495-496), questions about the conceptualisation of space relationally have been raised. For example, what are the relations in question, what exactly is it that they relate and how do they relate, what are the relational properties that make them distinct in both space and time, and finally, how can these relations be observed, if not by (selective) experiences. On this basis, the adoption of a relational perspective might not help steer clear from or fully address the many assumptions previously discussed that are at the basis of governance arrangement set-ups for managing the environment. Thus, which type(s) of relations and whose/what experiences should be recognised and accounted for when spatially defining the marine environment; how are discrete areas (spatial scale) or time periods (time scale) understood; and in what way are different relations or articulations of

relations expressed. What might be the implication of this is that the ethos and values behind a relational perspective to marine spatial planning might fall short in recognising those ecological principles (and non-material objects) defining the integrity and substance of the marine realm which are essential for informing and coordinating a value system that can assist the development of marine spatial plans, and the allocation of sea space to meet a range of planning goals and outcomes (Qiu and Jones, 2013).

Planning environment

This level of the culturalised planning model refers to the meanings and views that frame the values and principles adopted in planning practices, and inform the actions and behaviours of the stakeholders involved (Knieling and Othengrafen, 2015). Whilst in this paper it particularly focusses on an emerging marine spatial planning ethos and set of values that stem from the wider planning (and built environment) profession, it also builds on and forms part of the shared and more general societal values about what we understand the marine environment to be, and about how it should be valued and viewed, discussed in the previous section. How those unconscious, taken for granted beliefs, assumptions and perceptions are affecting our understanding of the marine environment can be depicted for example in guiding principles used in marine spatial planning practice.

Overall, there is general consensus in the principles portrayed in the published literature that marine spatial planning should follow an ecosystem-based approach (see for example, Ehler and Douvere, 2009; Foley et al., 2010; EC; 2008; Gilbert et al., 2015; Apeldoorn, 2008), which should also provide the basis for the development of an overall framework for marine spatial planning (EC, 2008). While some principles such as those proposed by the European Commission (2008, 2011), look at the marine environment in spatial and relational terms focussing particularly on the spatial identification and distribution of human activities and uses, at their associated impacts on environmental conditions and at the processes for regulating and coordinating land to sea spatial activities (Janßen et al., 2013). Other principles, such as those proposed by Foley et al. (2010), recognise the primacy of ecological principles, and the role that marine spatial planning should play in advancing ecosystem stewardship through longer term transformative approaches (Merrie and Olsson, 2014), by representing the integrity and the substance of the marine realm. Subsequently, these two sets of principles in particular are reflected upon in more detail.

In addition to the overarching principle of adopting the ecosystem approach, the European commission proposes ten key principles (EC, 2008; EC, 2011):

- Using marine spatial planning according to area and type of activity
- Defining objectives to guide marine spatial planning
- Developing marine spatial planning in a transparent manner
- Essential early involvement of stakeholder participation
- Coordination within Member States – simplifying decision-making processes
- Ensuring the legal effect of national marine spatial planning
- Cross-border cooperation and consultation (and strong political will to support this)
- Incorporating monitoring and evaluation in planning process (to allow for adaptive management approach to marine environment)

The majority of the EC's principles offer guidance that to a certain extent is not too dissimilar to what can be found and considered appropriate to support the regulation and implementation of terrestrial spatial planning (Smith et al., 2012), with the exception of the explicit acknowledgment that monitoring and evaluation should be part of the planning process to account for the specific features and characteristics of the marine environment. When critically evaluating these principles, Flannery and Ó Cinnéide (2012) however, indicate that they are somewhat inconsistent with the overarching approach that the EC is advocating for, in that the principles do not emphasise the place-based and integrated nature of the ecosystem approach. Similarly, Gopnik et al. (2012, p.1140, Box 1) indicate that though marine spatial planning is intended to have the ecosystem approach at its heart, in practice it fails "to capture the full complexity of true ecosystem based management". Further, while acknowledging the interface between marine and terrestrial environments, there is an assumption in the EC's principles that it is more appropriate and "crucial" to look at this "transitional space from land to sea" (EC, 2011, p.6), potentially discounting the view from sea to land. While being able to rely and build on existing governance structures, agencies and well-established terrestrial planning processes and approaches might be an attractive convenience, it also asserts the dominance of land-based views in marine spatial planning (Gazzola et al., 2015), and ignores calls to consider counter views such as one that can fully appreciate the delineation of ecologically cohesive marine planning units defined by natural processes (Duck, 2012). This perspective of viewing the marine environment through land-based lenses is further emphasised in the EC's principle about applying marine spatial planning according to area and type of activity. As noted by Flannery and Ó Cinnéide (2012), it may result in land-based type dichotomies being applied to the sea, such as rural and urban seas (Smith et al. 2012), and promote sectoral approaches to uses of the marine space (Jay, 2010; Qiu and Jones, 2013), which might not be fully compatible with the interconnected and three-dimensional nature of the marine environment and fail to give due consideration to key ecological principles, such as heterogeneity, connectivity, interaction webs and biogeochemistry of marine areas, which maintain the functioning of ecosystems (Crowder and Norse, 2008; Foley et al., 2010). In the UK, for example, it is suggested that this could lead to a "race for space", particularly for those sectors and industries that are likely to benefit from the centralised governance system of marine spatial planning as it facilitates the promotion of central governments' national interests and priorities (Qiu and Jones, 2013; Merrie and Olsson, 2014). According to Ritchie (2014, p.673), the UK's centralised set-up of marine spatial planning is in effect allowing power to be used "to prime the marine environment for competitive market development", putting sectoral and industrial interests at an advantage over the protection of the sea's ecological integrity and more in general sustainable management (Laffoley, 2000). While the shift to having a single authority for managing marine-based activities and uses is generally viewed positively, as it helps avoid pitfalls and resolve inevitable conflicts (Crowder and Norse, 2008); an understanding and portrayal of the marine environment in terms of the uses and activities that define it might still promote a sectoral rather than integrated and holistic governance approach to marine systems and spatial planning.

At the opposite end of the spectrum, Foley et al. (2010) propose that to adopt an ecosystem-based approach to marine spatial planning and account for the nature of the marine environment and sustain human uses of sea spaces, then ecological principles should frame and inform marine spatial planning, a view that is also shared by Duck (2012), Appeldoorn (2008) and Crowder and Norse (2008). Informed by a critical review of principles portrayed in the literature, Foley et al. (2010) propose four principles which are to maintain or restore:

- native species diversity;
- habitat diversity and heterogeneity;
- populations of key species; and
- connectivity.

They also propose two overarching principles, which are to account for the need to consider:

- context, including geomorphological and biogeographical factors and uses of the marine environment; and
- uncertainty, surrounding ecological responses to human activities or the effects of climate change, and call for precautionary and adaptive management approaches to be central to marine spatial planning (ibid.).

If compared to the EC's principles, as explained by Foley et al. (2010) these principles are likely to foster a more holistic approach to marine spatial planning, as they give prominence and strength to ecological goals so that they can help determine and guide spatial uses and activities within marine spatial planning. According to Crowder and Norse (2008), a focus on ecological principles is justified by the escalating crisis in marine ecosystems which governance systems to date have failed to manage, because reliant on uncoordinated single-species and sectoral management and decision-making approaches, ignorant of gaps between ecological and jurisdictional boundaries, and of appreciating the importance of contextual factors (Young et al. 2007; Duck, 2012). Within an information-poor environment, the complexities of marine ecosystems and the uncertainties surrounding ecosystem dynamics and responses to environmental change, induced for example by human activities and uses or by changes associated with climate change, substantiate the setting of uncertainty as an overarching principle. This in turn, makes the need for monitoring and the precautionary principle an imperative to follow, implicitly referred to in Foley et al.'s (2010) principles, and more explicitly stated in other principles, such as those proposed by Appeldoorn (2008) who recommends that the precautionary principle be employed at all times.

Though they provide a "strong scientific foundation" for siting human uses and managing their effects, as acknowledged by Foley et al (2010) the ecological principles alone do not support both human and biophysical attributes, within interacting social, economic, political and ecological systems, and should therefore "be coupled with socioeconomic and governance principles" (p.963). As a result, "spatial experiences" of the marine environment reflecting a more relational rather than ecological and scientific understanding of the marine environment, including policy and development timeframes and the scalar effects of development and politics, are not captured by Foley et al.'s principles. While the proposed ecological principles could be considered instrumental for achieving "true" ecosystem-based marine spatial planning, they are insufficient in assisting the delivery and implementation of a sustainability-oriented approach to marine spatial planning (Soininen and Hassan, 2015), whereby environmental, social and economic factors are considered in a holistic and integrated manner.

Planning artefacts

This level of the culturalised planning model encompasses visible planning products, structures and processes, including distinctive features and characteristics of both, the planning systems and products, such as strategies, plans or projects (Knieling and Othengrafen, 2015). As such, it refers to

the manifested expressions of a planning culture. While this paper does not examine a specific marine spatial planning system or culture of practice, it is still possible to reflect on trajectories or traits emerging from the discussions presented in the previous two sections, and levels of the model. What the reviews have suggested thus far is that there are different understandings of the marine environment that are informing the "planning environment" and therefore, the views, beliefs and behaviours as well as the actions leading to planning artifacts, as reflected in the reviewed principles for guiding practice. These understandings tend to coincide with wider societal beliefs and perceptions, where in an information-poor yet highly complex and uncertain environment, it becomes understandable and convenient to look at the sea, and manage planned and proposed uses and activities through the more familiar and established land-based lenses, and, as a matter of caution, take stock of the ecological principles and insights known. What then becomes essential is on the one hand, to enhance both the planning environment and societal environment learning about the marine environment and experiment perhaps with sea-to-land views and planning solutions and artifacts that are appropriate to respond to specific ecological needs, rather than default known and established terrestrial planning approaches and techniques. On the other hand, as reflected in the ecological principles proposed by Foley et al. (2010), to listen to those calls by the scientific community and recognise the primacy and foundation of ecological principles and values in the development of marine spatial planning practice (Duck, 2012; Crowder and Norse, 2008), so that they can be used in conjunction with socioeconomic and governance principles, whilst also acknowledging that the marine environment may require a different conceptualisation of space (Gazzola et al., 2015). The reviews presented in the previous two sections have also indicated that a gap between the idea of marine spatial planning and its operationalisation and implementation through the ecosystem-based approach might be emerging, suggesting a gap between marine spatial planning ethos and values, and planning artifacts. As reflected in the EC's principles, it is becoming apparent that the focus on social-ecological systems and understandings of the marine environment is being diluted as the take up and adoption of marine spatial planning progresses and becomes more reliant on, or established in, existing policy- and decision-making systems (Merrie and Olsson, 2014).

Concluding reflections

This paper aimed to explore the extent to which the relationship between marine spatial planning and its "terrestrial parent" is affecting the development of a set of shared values providing an understanding of what the marine environment is, how it should be viewed and valued; and a framework for shaping marine spatial planning agendas and cultures of practice. This is done by borrowing concepts and models from the literature on comparative European spatial planning systems, and by adapting Knieling and Othengrafen's (2015) culturalised planning model composed of planning artifacts, planning environment and societal environment. In this context, marine spatial planning is considered as a sub-culture of terrestrial spatial planning, and that as a practice, its ethos and shared principles are therefore conditioned by the wider understanding of planning it is practice within; and by the understanding and assumptions about the marine environment of the wider societal environment.

As acknowledged in the academic literature and reflected in the principles guiding practice reviewed in this paper, the development of marine spatial planning is driven by terrestrial spatial planning inspired principles and views; and by ecological principles and views informed by marine sciences

(Kidd and Shaw, 2014; Ritchie and Ellis, 2010; Gazzola et al., 2015). When grounded in the marine and ecological sciences yet inscribed in discourses of sustainable development within the wider field of planning, consideration of the marine environment and of the type of values and understandings that should prevail and inform cultures of practice can become problematic. This is because it gives rise to problem areas or to concerns, which affect planning decisions in space and time providing the basis for the formation of shared (environmental) values (Wolf, 2003; Brand, 1999). The environment provides a representation of space that fulfils common or public interests, and it is under this appeal and claim of operating in the public's interest that spatial planning practices can be justified and politically explained and sometimes controlled through environmental values. The three-dimensional nature of the marine environment adds additional layers of complexity, as it offers opportunities to engage with the marine space in multiple ways, with multiple users who have multiple interests, experiences and views, suggesting that a value system informing marine spatial planning should go beyond claims of operating in the public's interests to encompass the rights of all species, whether human or non-human, who experience, inhabit and use the marine environment (De Santo, 2011). Developing an appreciation of the different views, values or understandings of what the marine environment is, is important; they represent and encapsulate evolving intellectual, experiential and emotional processes, bounded by human social and organisational capabilities and by the uncertainties and complexities that define the environment (Simon, 1976), which altogether contribute to informing society's and planning's understanding of what the marine environment is and potentially, how it should be (intentionally) used, valued, viewed and planned for. The role that institutions, practitioners and stakeholders play in producing or reproducing societal values, professional norms, ideas or discourses are also important in explaining how and why planning is practiced in a certain way, and how and why practice is different in different contexts (i.e. context of application, region, country), or how and why different planning contexts or cultures of practice might be more susceptible or resistant to change (Taylor, 2013). Equally important in understanding planning cultures of practice is the question about language, and about how intents to use or protect the marine space are articulated and expressed. Following Hirsch (2005), languages, including professional languages, are continuously evolving, reflecting new and more diverse ways to encapsulate the way in which different societies, cultures or even professions, such as that of spatial planning, organise around their local environments, use natural resources, or express their intention to use natural resources (as articulated for example, in planning artifacts). Based on Ostrom *et al*. (1999), while this could lead to innovations and diversifications in approaches to environmental management and planning; it could also perpetuate the transposition of land-based terminologies, expressions or understandings to marine spatial planning practice, because functional to the needs or ethos of the shared spatial planning community, rather than of the needs of the specific marine spatial planning community or culture of practice (based on Hirsch, 2005). This is reflected for example, in the application of urban-rural dichotomies to the sea or in the use of expressions potentially portraying a land-centric view, as reflected in the "land to sea" wording in the EC's principles.

Reflecting on marine spatial planning as an emerging culture of practice, is helpful for developing an appreciation of what might be informing practice and policy- and decision-making processes and for making those informal norms and values less obscure and more specific to the marine environment needs. With marine spatial planning emerging as a field of practice and as an important instrument for using and protecting marine resources in a sustainable way, it is becoming evident that there is a

need to develop a better (or wider societal) understanding of what the marine environment is to define an appropriate and based on Ostrom et al (1999) intentional set of shared values that can inform policy and decision-making, and help shape a culture of practice for marine spatial planning. As the analysis suggests, relying on land-based views and terrestrial spatial planning approaches and techniques, albeit convenient to set up an emerging and inexperienced marine spatial planning system, might lead to certain assumptions and beliefs in marine spatial planning, becoming more established in both, the profession (planning environment) and wider society (societal environment). If this is the case, then values associated with the more transformative role that marine spatial planning could play in advancing ecosystem stewardship (Merrie and Olsson, 2014) and knowledge by experimenting with appropriate planning solutions in response to specific ecological needs (Duck, 2012; Crowder and Norse, 2008), might continue to be diluted from the emerging marine spatial planning culture of practice, further increasing the gap between marine spatial planning aspirations and their operationalisations, as manifested in planning artifacts. On the other hand, relying on ecological principles alone are also insufficient, as they do not encompass those values deriving from a more relational and experiential understanding of the marine environment.

What is therefore becoming apparent is that for a culture of practice for marine spatial planning to develop specific to marine needs and agendas, terminologies, principles and values should not "just" be borrowed by established terrestrial spatial planning systems following land-based rationales, nor should they focus on ecological principles and values alone. Both professional and scientific values and inputs are important, but so are those values deriving from the culture, relations and experiences of the wider society. Though future research should be conducted for testing the culturalised planning model in a specific context or culture of practice, the analysis presented in this paper informed by reviews of the literature indicates that greater engagement with the basis and foundations of Knieling and Othengrafen's (2015) culturalised planning model, and a better appreciation of those underlying and unconscious beliefs, perceptions, thoughts and feelings which affect our understanding of the marine environment, should contribute to informing an ethos and shared values for a culture of marine spatial planning practice.

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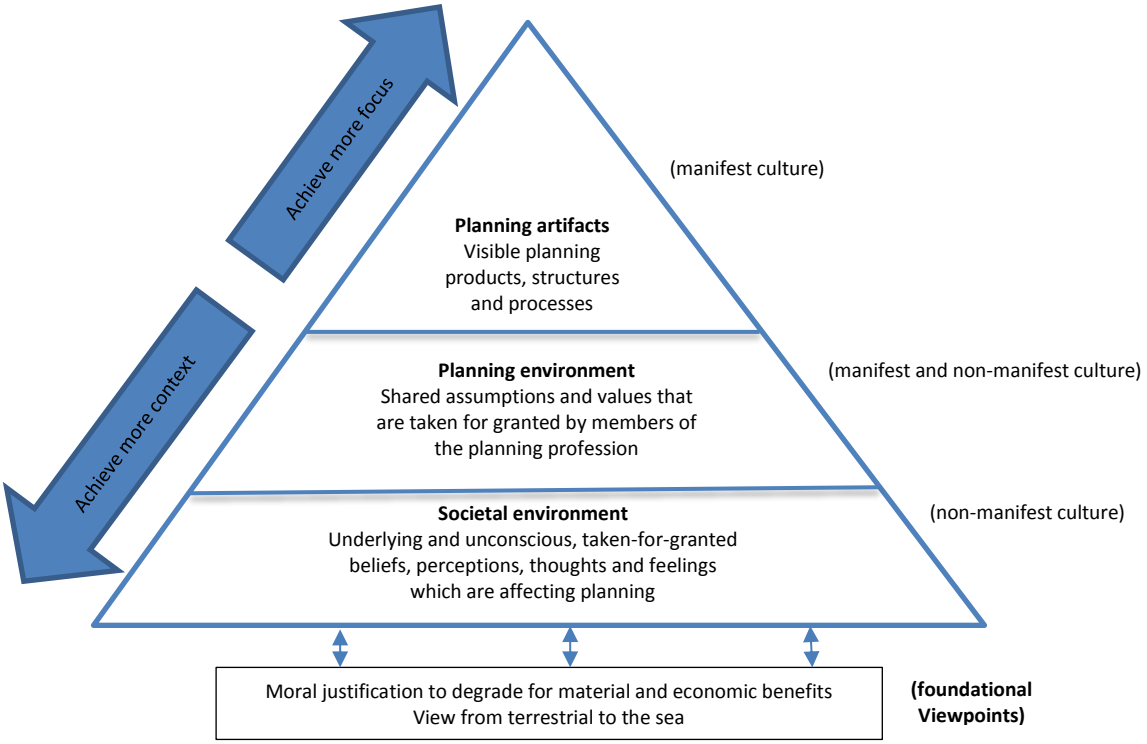
Figure 1

(a) The culturalised planning model (adapted from Othengrafen, 2010 cited in Knieling and Othengrafen, 2015, p.2137)



(b) Analytical framework